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The Gent Formation

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The Gent Formation was introduced by Paepe (1976; p. 28) to include "all coversands deposited during the Weichselian". Gullentops et al. (2001) extended the chronostratigraphic meaning of the Gent Formation to all sandy aeolian coversand deposits dating from the Middle Pleistocene to the Holocene. In the classification here proposed, the Gent Formation not only includes the "coversands" but all types of aeolian sand deposits present in the coastal area, the coversand area and the so-called transitional area, the latter lying in between the coversand and the loess area. Compared to those in the coversand area, aeolian deposits in the transitional area are characterised by an increase in the silt fraction.

This new classification is based on lithological characteristics only, in contrast to former schemes that also used chronostratigraphical and geomorphological criteria. The usage of terms as coversand and dune sand is therefore abandoned, as they refer to aeolian sands that drape the landscape in a more or less continuous way ("coversands"), or to distinct morphological shapes ("dunes"). The present classification uses macroscopic features (including soil horizons, cryogenic structures, etc.) to rank the sediments; in sections of sediment successions, these features can be diagnostic for the different chronostratigraphical periods that the sediment units represent.

The Gent Formation is subdivided in 5 Members.

1. Dilsen Member

Authors: Paulissen (1973) introduced informally the Dilsen Formation. The unit was later on formally ranked as a member within the aeolian Gent Formation (Gullentops et al., 2001).

Description: The Dilsen Member consists of yellow horizontally laminated slightly silty sands. Typically, an interglacial soil developed in these sands, with a reddish-brown Bt-horizon, which is thought to be the equivalent of the Eemian Rocourt pedocomplex in the loess sections (Haesaerts et al., this volume). It is most frequently found overlying the Eisdén-Lanklaar terrace of Saalian age (Gullentops et al., 2001) and covered by younger aeolian deposits.

Stratotype: Eisdén-Lanklaar terrace in the Meuse Valley, Limburg

Area: Belgian sand belt

Thickness: Maximum 1-2 m

Age: Saalian

2. Tisselt Member

Authors: Bogemans (1988, 1993) informally introduced the Tisselt Member.

Description: Yellow to grey alternated bedded deposits of silty and sandy sediments.

The deposits consist either of well-defined alternating layers or laminae of silt and sand with very distinct bounding surfaces or as a unit in which one texture predominates interlayered with layers or laminae of different texture. In the coversand area commonly sand predominates whereas in the transitional area silt prevail.

Massive bedding, horizontal bedding and small ripple bedding is observed. Frost cracks and deformation structures are common (on several levels).

If present, the Tisselt Member is always covered by the Opgrimbie Member. It lays on Quaternary or pré-Quaternary deposits.

Stratotype: Two stratotypes are defined for this member as the textural composition of this unit differs for different depositional areas. The stratotype for the northern part of the sand belt is core 58E296 (Lambert coordinates: x = 151159, y = 191869; z = 7.91 m TAW). The stratotype for the transitional area is core 73W279 (Lambert coordinates: x = 152840, y = 185257; z = 13.5 m TAW).

Area: the coversand and the transitional area.

Thickness: less than a meter to several meters

Age: Weichselian

3. Opgrimbie Member

Authors: present ones, this volume

Description: The Opgrimbie Member consists of homogeneous sand and silty sand. The colour is pure and bright white, to grey, yellow and brown, and is dependent on local hydro- and/or pedological processes. Massive stratification is dominant, horizontal or oblique stratification may be present. Frost cracks, frost wedges and deformation structures can be present in the sediments, as well as thin (usually one pebble-thick) gravel horizons. Intercalated soil horizons, organic-rich layers, clay-enriched lamellae are frequently observed; the intercalated soils can be weak, well-developed or degraded, and their appearance depends on the parent material in which they developed. A cultural layer is common at the top.

The Opgrimbie Member covers the Tisselt Member (if present). In sequences, it can usually be distinguished from the overlying Achterbos Member (if present), essentially on account of colour and/or an intercalated organic-rich (soil) horizon or cultural layer.

Stratotype: Opgrimbie: N50°57'13" E5°38'52"

Area: Coversand and transitional area in Flanders.

Thickness: Up to several metres

Age: Late Weichselian (MIS2) and, occasionally, Holocene (MIS1) (see e.g. Bogemans and Vandenberghe, 2011; Derese et al. 2009; 2010a; 2010b; 2012; Vandenberghe et al., 2009).

Remarks: The Opgrimbie Member thus comprises the cover- and dune sands previously defined as the Wildert Member and the Hechtel Formation (but excluding the Kalmthout Member) by Gullentops et al. (2001).

4. Achterbos Member

Authors: present ones, this volume

Description: The Achterbos Member consists of (dull) greyish-yellow very well-sorted and loosely packed fine sand (mode between 125-250 µm) displaying cm- to dm-scale bedding caused by subtle variations in grain-size. Individual sublayers may contain up to 10% coarse sand (> 0.5 mm) or up to 10% silt and clay (< 63 µm). The origin of these sands can be traced back to deflated Podzols and the (aeolian) parent material they were formed in. The lower boundary of the unit is very clear if it overlays older aeolian deposits with soil development but less clear if the soil had been removed by aeolian deflation. In sedimentary sequences the unit is always laying on top; often an incipient soil can be observed in the top of this unit.

Stratotype: Interfluvium between the Kleine Nete and the Breilloop (Kleine Nete catchment; N51°12'57", E5°05'27"), where these sands have produced a distinct morphology known as a drift sand landscape (Achterbos, Mol).

Area: Belgian sand belt

Thickness: From a few dm up to several meters.

Age: (late) Holocene (Derese et al., 2010a; Beerten et al., 2012, 2014)

Remarks: The Achterbos Member replaces the Kalmthout Member as defined in Gullentops et al. (2001). Aeolian sands (drift sands) belonging to this member are described in Beerten et al. (2012; 2014).

5. De Panne Member

Authors: Based on the work of Depuydt (1972) Gullentops et al. (2001) introduced the De Panne Member as part of the Hechtel Formation.

Description: Yellow grey to grey medium to fine sand with peaty layers (Lebbe & De Ceunynck, 1980; De Ceunynck, 1984) and pale yellow medium sand, sometimes with humic intercalations and/or fine layers composed of shell remains. The stratification is characterized by variable dip angles.

Stratotype: The Panne area

Area: Coastal plain.

Thickness: From a few meters up to more than 7 meters.

Age: Holocene

Remarks: Gullentops et al. (2001) incorporated De Panne Member as part of the marine and estuarine deposits, although in the stratigraphic table the Member is part of aeolian deposits of the Hechtel Formation.

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